

COVID-19: What's New for April 7, 2020

Main updates on IHME's COVID-19 predictions since April 5, 2020

First predictions for COVID-19 deaths and hospital resource use in Europe

Today IHME releases its first estimates of predicted peaks in COVID-19 deaths and hospital resource use among countries in the European Economic Area (EEA). This initial release focuses on countries in the EEA, and for three of these (Germany, Italy, and Spain), we also include predictions at the subnational level. Full coverage of this initial release for Europe can be found [here](#); the corresponding manuscript will be posted by Tuesday, April 7.

These initial predictions for EEA countries are based on the same modeling approach developed for generating predictions of COVID-19 deaths and hospital use in the US. The main modeling updates were published on April 5, and can be found [here](#). And in the same way that the US-based projections have improved since our first release on March 26, we also anticipate our European predictions will improve as more data are incorporated into the analysis.

Explore these initial predictions for EEA countries, as well as the latest estimates for the US, with IHME's online visualization tool: <https://covid19.healthdata.org/projections>

Key findings from today's release: a focus on Europe

- **Current trajectories suggest a total of 151,680 COVID-19 deaths could occur during the epidemic's first wave for EEA countries.** The United Kingdom, Italy, Spain, and France are among those with the highest predicted cumulative deaths from COVID-19 during this first wave (as shown below).

Country	Total cumulative COVID-19 deaths predicted through first wave: average projection (estimate range)
United Kingdom	66,314 (55,022 to 79,995)
Italy	20,300 (19,533 to 21,185)
Spain	19,209 (18,049 to 20,651)
France	15,058 (12,906 to 17,715)

- **Predicted peaks in daily COVID-19 deaths appear to be highly variable among EEA countries,** likely reflecting the equally variable ways that the novel coronavirus initially spread and then continued to affect Europe. According to the latest available data, countries including Italy, Spain, Netherlands, and France may have already seen their peak daily COVID-19 deaths: 969 on March 27 for Italy; 175 on March 31 for the Netherlands; 950 on April 1 for Spain; and 801 on April 3 for France. In contrast, populous countries such as the United Kingdom and Germany could experience peaks exceeding an average of 100 daily deaths from COVID-19 in the coming weeks (see below).

Country	Predicted peak date of daily COVID-19 deaths	Predicted daily COVID-19 deaths at peak: average projection (estimate range)
United Kingdom	April 17	2,932 (829 to 7,922)
Germany	April 19	377 (83 to 1,237)
Poland	April 24	104 (14 to 202)
Sweden	April 27	134 (53 to 296)

- **Specific country findings include, as also found in today's [press release](#):**

- **Italy:** The first wave of the pandemic has peaked in Italy at the national level, and peak resource use for ICU beds and ventilators was on March 28. Deaths have peaked in 15 of 21 Italian regions. Deaths are forecast to peak in Calabria on April 7, and in Puglia on April 16. On April 6, 699 daily deaths were projected, with only three provinces (Lombardy, Piedmont, and Emilia-Romagna) seeing more than 50 deaths daily.
- **Spain:** Almost all regions of Spain are at or past the peak. Excess demand for ICU beds is particularly high in Spain compared to many other countries in Europe. The forecasts predict 19,209 total deaths from COVID-19 in Spain by August 4.
- **Portugal:** Deaths in Portugal peaked on April 3 with an estimated 37 deaths. The model shows that while Portugal did not have a total bed shortage on that date, it did not have enough ICU beds to meet demand, with the shortage peaking at 118 ICU beds on April 3. The model predicts 471 total deaths in the country by August 4.
- **France:** The model shows that France is just passing its peak and will have a total of 15,058 deaths by August 4. The country is expected to have enough total beds to meet demand, but a shortage of 4,330 ICU beds. The forecasts predict 6,091 ICU beds will be needed for COVID-19 patients in France.
- **Germany:** Deaths in Germany are forecast to peak in the third week of April, with an estimated 377 deaths on April 19. The model shows that Germany will have enough beds and ICU beds to meet demand, with the required number of total beds peaking at 12,222 on April 14, and predicts 8,802 total deaths in the country by August 4.
- **Sweden:** Deaths in Sweden are forecast to peak the last week of April, with an estimated 134 deaths on April 24. The model shows that Sweden will not have enough beds and ICU beds to meet demand, with the shortage peaking at 1,090 ICU beds on April 25, and predicts 4,182 total deaths in the country by August 4.

Key changes since our last release on April 5, 2020

Data updates and information

With this release for EEA countries, we include all currently available data on COVID-19 deaths, hospitalization and resource use, and social distancing policies implemented as of April 5. For Germany, Italy, and Spain we also provide forecasts for subnational locations at the first administrative level.

Analytic and methods updates

COVID-19 death model. Our April 5 release involved a number of major methods updates for the IHME COVID-19 death model ([read more here](#)). With today's release, we have incorporated the following updates:

- We now ensure that draws from the predictive validity uncertainty distributions are correlated over time, a model refinement that generates smoother estimates of uncertainty.
- Based on the now multiple iterations of our COVID-19 death model, we have noticed that, for at least some US states, there are massive fluctuations in the number of COVID-19 deaths reported each day. These substantial day-to-day vacillations are more likely due to an artefact in how statewide deaths are being compiled and then reported each day than actual fluctuations in COVID-19 deaths. As a result, our reported predictions – that you can view and download from the online visualization tool – are now based on averaging the last three rounds of predictions. In other words, what is shown today (April 6) is the average of model predictions from reported COVID-19 death data up to April 4 (model 1), data up to April 5 (model 2), and data up to April 6 (model 3). We view this as an important refinement that helps to strengthen model stability and buffer predictions from data fluctuations less related to observed epidemic patterns and more driven by variable data collection or reporting practices.

A note of thanks

None of these estimation efforts is possible without the tireless data collection and collation efforts of individuals throughout the US, Europe, and world. Your work in hospitals, health care organizations, local health departments, and state and national public health agencies, among others, is invaluable. We thank you for your dedication to fighting the coronavirus pandemic and we appreciate your willingness to share data and collaborate with the IHME COVID-19 team.

For all COVID-19 resources at IHME, visit <http://www.healthdata.org/covid>.
Questions? Requests? Feedback? Please contact covid19@healthdata.org.